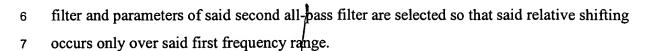
CLAIMS

1 A method for combining a first	audio signal from a first audio channel and a
second audio signal from a second audio	channel, said first and second audio signals
having a first and second frequency range,	, comprising:
shifting the phase of said first audi	o signal relative to said second audio signal,
wherein said shifting is substantially limite	ed to a first frequency range; and
combining the audio signal from sa	aid first channel with the audio signal from said
second channel.	

- 2. A method for combining audio signals in accordance with claim 1, wherein said first frequency range is the bass frequency range.
- 3. A method for combining audio signals in accordance with claim 2., further comprising downmixing a third channel and a fourth channel to produce a one of said first channel or said second channel.
- 4. A method for combining audio signals in accordance with claim 3, further comprising the step of downmixing a fifth channel and a sixth channel to produce the other of said first channel or said second channel.
- 5. A method for combining audio signals in accordance with claim 1, further comprising downmixing a third channel and a fourth channel to produce a one of said first channel or said second channel.
- 6. A method for combining audio signals in accordance with claim 5, further comprising the step of downmixing a fifth channel and a sixth channel to produce the other of said first channel or said second channel.
- 7. A method for combining audio signals in accordance with claim 1, wherein said relative shifting involves applying said first audio signal to a circuit including a first all-pass filter, filtering said audio signal from said first audio channel, and applying said second audio signal to a circuit including a second all-pass filter, filtering said second audio signal from said second audio channel, wherein parameters of said first all-pass



- 8. A method for combining audio signals in accordance with claim 1, further comprising adjusting the frequency response of the path carrying the combined audio signals.
- 9. A method for combining audio signals in accordance with claim 8. wherein said adjusting includes equalizing said combined audio signal.
- 10. A method for combining audio signals in accordance with claim 1, wherein said combining combines only the spectral components in said first frequency range.

1. An audio system comprising:

an audio signal source constructed and arranged to provide a first channel signal and a second channel signal; and

a phase shifter, coupled to said audio signal source for shifting, only over a first range of frequencies, the phase of said first channel signal relative to said second channel signal, wherein said phase shifter is constructed and arranged to substantially limit said phase shifting to said first range of frequencies.

- 12. An audio system in accordance with claim 11, is constructed and arranged to maintain the phase of said first channel signal relative to said second channel signal unchanged over a second range of frequencies.
- 13. An audio system in accordance with claim 12, wherein said first range of frequencies is lower than said second range of frequencies.
- 14. An audio system, comprising:
 - a first audio channel input for providing a first audio signal;
- a second audio channel input for providing a second audio signal;
 - phase shifting circuitry, coupled to said first audio channel input and said second audio channel input, for shifting the phase of said first audio signal relative to said second audio signal over a first range of frequencies to produce a partially phase shifted audio signal; and

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approximately 16.



8	a combiner, for combining said partially phase shifted first audio signal and said
9	second audio signal to produce a combined audio signal.
1	15. An audio system in accordance with claim 14, said phase shifting circuitry
2	includes a first all-pass filter coupling said first audio channel input and said combiner,
3	said first all pass filter having first filter parameters, and
4	a second all pass filter coupling said second audio channel input and said
5	combiner,
6	said second all pass filter having second filter parameters.
1	16. An audio system in accordance with claim 15, wherein said first filter
2	parameters and said second filter parameters are predetermined so that said phase shifting
3	circuitry shifts the phase of said first audio signal relative to said second audio signal
4	only over said first range of frequencies.
1	17. An audio system in accordance with claim 16, wherein said first range of
2	frequencies is limited to the bass frequency band.
1	18. An audio system in accordance with claim 15, further comprising a third all-
2	pass filter coupling said first all-pass filter and said combiner,
3	said third all-pass filter having third filter parameters
4	and a fourth all-pass filter coupling said first all-pass filter and said combiner,
5	said fourth all-pass filter having fourth filter parameters,
6	wherein said first and third all-pass filters have a frequency spacing of
7	approximately 16 and wherein said second and fourth all-pass filters have a spacing of

1	19. An audio system in accordance with claim 15, further comprising a third all-
2	pass filter coupling said first all pass filter and said combiner,
3	said third all-pass filter having third filter parameters,
4	and a fourth all-pass filter coupling said first all-pass filter and said combiner,
5	said fourth all-pass filter having fourth filter parameters,
6	wherein the combination of said first and third all-pass filters have a frequency
7	spacing factor relative to the combination of said second and fourth all-pass filters of
8	between three and five.
1	20. An audio system in accordance with claim 14, further comprising a first low-
2	pass filter for filtering said first audio signal low-ass filter for filtering said second audio
3	signal so that said combiner combines only the bass portions of said first audio signal and
4	said second audio signal.
4	21. An audio system in accordance with claim 14, further comprising a low-pass
1	
2	filter for filtering the output signal of said combiner to provide only the bass portion of
3	said combined signal.
1	22. An audio system in accordance with claim 14, further comprising a
2	downmixing circuit for downmixing signals in a third channel and a fourth channel to
3	form said first audio signal.
1	23. An audio system in accordance with claim 14, wherein said combiner
2	combines said partially phase-shifted first audio signal and said second audio signal only
3	in said first range of frequencies.
1	24. A method for combining n audio signals from n audio signal channels, where
2	n is a number greater than two, comprising
3	relatively shifting the phase of each of said audio signals relative to each of the
4	other audio signals to furnish corresponding phase-shifted signals; and
5	combining the n phase-shifted audio signals.

one to n.

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1	25. A method for combining n audio signals in accordance with claim 24,
2	wherein said relative shifting comprises shifting the phase of each of said audio signals
3	by a different amount.
1	26. A method for combining n audio signals in accordance with claim 25,
2	wherein said relative shifting comprises shifting the phase of each of said audio signals
3	by $i\frac{360}{n}$ degrees, where i is an integer index from the group consisting of zero to n-1 and

- 27. A method for combining n audio signals from n audio channels in accordance with claim 24, wherein said shifting is substantially limited to a frequency range.
 - 28. A method for combining n audio signals from n audio channels in accordance with claim 27, wherein said frequency range is the bass frequency range.